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Running head: POLY-VICTIMIZATION OVER TIME

Violent Poly-Victimization Over Time: A Longitudinal Examination of the Prevalence and Patterns of Physical and Emotional Victimization Throughout Adolescence (11-17 years).

Ingrid Obsuth^{*a}, Katrin Mueller Johnson^a, Aja Louise Murray^a, Denis Ribeaud^b, Manuel Eisner^a

^aInstitute of Criminology, University of Cambridge
Sidgwick Site, Cambridge, CB3 9DA, UK e-mail: io229@cam.ac.uk

^bDepartment of Sociology, Federal Institute of Technology, Zurich
Crime Research Unit
Clausiusstrasse 59
RZ E 2
8092 Zurich
Switzerland

*Corresponding author

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Abstract

In this study, we aimed to characterize developmental patterns of poly-victimization in a normative sample of adolescents by applying longitudinal latent class analysis. Using the four most recent waves of data from the Zurich Project on the Social Development of Children and Youths (z-proso), we identified three classes, or separate groups of youths with distinct patterns of victimization from age 11 to 17. The largest class represented young people who were least likely to be victimized in any way and at any time. The two smaller groups represented different types of poly-victimization – a non-parental and a long-term parental victimization group. Adolescents in the two groups differed both in the number as well as type of victimization at different times. Moreover, differential class membership also had implications for their mental health outcomes.

Keywords: Poly-victimization, longitudinal latent class analysis, adolescence, violent victimization.

Introduction

Poly-victimization refers to multiple types of victimization suffered by a single individual within the same time frame. It is a relatively new concept (e.g. Finkelhor, Ormrod, Turner & Hamby, 2005; Finkelhor, Ormrod, & Turner, 2007; Finkelhor, Turner, Hamby, & Ormrod, 2011), with the majority of victimization research to date having focussed on single types of victimization (e.g. bullying, child maltreatment). This narrow focus runs contrary to evidence that often children who are victimized by one type of offence (e.g. by sexual victimization) have also suffered other types of victimization (e.g. physical maltreatment; Finkelhor et al., 2007). Although some studies have statistically controlled for other types of victimization (e.g. Lereya, Copeland, Costello, & Wolke, 2015), it has been argued that the focus on a single type of victimization may overestimate its effect and mask the hidden effect of other types of victimization a child has also experienced (Soler & Forns, 2014). This highlights the importance of studying poly-victimization.

Definitions and operationalizations of poly-victimization vary considerably across studies with implications for its estimated prevalence. One approach has been to define poly-victimization in a sample-specific manner. In some research, primarily studies concerning lifetime poly-victimization (e.g. Cyr et al., 2013; Finkelhor, Ormrod, & Turner, 2009; Finkelhor, Shattuck, Turner, Ormrod, & Hamby, 2011; Le et al., 2015), the top 10% of participants with the highest number of victimization types suffered have been defined as poly-victims. However, as assessed victimization types and prevalence rates differ in different samples, the same relative cut-off mark leads to different substantive cut-offs which makes comparisons across studies difficult. Another approach has been to define absolute cut-off scores that make data more easily comparable across studies. Specifically, the threshold of four different types of victimization in the previous year has been employed to define poly-victimization in a number of studies (Cyr et al., 2013; Finkelhor, et al., 2007; Pereda, Guilera, & Abad, 2014) reporting between 8% (Cyr, et al., 2013) and 12% (Finkelhor, et al, 2005) poly-victimization prevalence rates in samples of 2-17 year olds, in Canada and the United States, respectively. Using the same cut off, Pereda and colleagues (2014) reported a 19.3% prevalence rate in a Spanish sample of 12-17 year olds. A five or more victimizations cut-off was used by Ellonen and Salmi (2011), who classified 9% of their sample of 12- to 16-year-old Finnish adolescents as poly-victims. Furthermore, findings from a recent population-based prevalence study (Jackson, Browne, & Joseph, 2016) reported that young people in one county of the UK were exposed to an average of 2.8 different types of victimization at school and/or in the community. This number would be very likely higher if victimization experienced at home were included in this study. Poly-victimization rates vary across countries and also across studies within countries not only because of differences

in the definition of, or cut off for poly-victimization but also due to differences in the types of victimizations which are measured and differences in sample characteristics (e.g., age). Despite these differences, it is clear that poly-victimization affects a non-negligible group of victims.

While in the past several years progress has been made in examining the prevalence and characteristics of poly-victimization, much less is known about the developmental nature of poly-victimization. In one of the rare studies that have used a longitudinal design, Finkelhor, Ormrod, Turner and Holt (2009) assessed children (aged 2-17 years at the first data collection) three times over a four-year period and found that of the youths who were classified as poly-victims in waves 2 and 3 of the data collection, 53% were poly-victims in wave 1 as well, showing that poly-victimization may persist over time. Notably, the study also reported a considerable heterogeneity among those who were poly-victimised with respect to the seriousness of victimization, types of victimization, where it occurred and by whom over time.

More recently, efforts have been made to explore this heterogeneity and examine through the use of person-centered analyses, such as latent class analysis (LCA), whether meaningful classes of poly-victims can be identified. Several cross-sectional studies utilizing this approach were carried out on specific subpopulations of psychiatric patients, justice involved or homeless youths (Adams, et al, 2016; Aebi, et al., 2015; Bender et al., 2014; Butcher et al., 2016; Ford et al., 2013; Grasso et al., 2013; Kretschmar et al., 2016; Tossone, et al., 2015) or a mix of high risk subsamples of adolescents (Kretschmar et al., 2016). Fewer such investigations were carried out utilizing normative samples (Ford, et al., 2010; Reid & Sullivan, 2009; Turner, Shattuck, Finkelhor, & Hamby, 2016). They identified between two (Tossone, et al., 2016) and six classes (Ford, et al., 2010; Turner et al., 2016) of which one (e.g., Butcher et al., 2016; Turner et al., 2016) to four (e.g., Adams, et al., 2014; Ford et al., 2010) were different types of poly-victims, or groups of youths with different patterns of poly-victimization. Most studies identified a low victimization class, and a range of smaller other classes; for instance, in addition to the ‘non-victims’, and ‘poly-victims’, Turner and colleagues (2016), found four more classes, or groups of individuals – ‘home-victims’, ‘sexual victims’, ‘home and school victims’, and ‘community victims’. The differences in classes depended on types of victimizations included in each study, sample size and characteristics as well as on what additional aspects of victimization were considered in the LCA (e.g., chronicity in Adams et al., 2016; context in Turner, et al., 2016).

Despite these differences, all the studies that included analyses related to mental health and behavioral outcomes indicated that youths in the poly-victimization group/s were at the highest risk for a variety of mental health and behavioral problems, including delinquency (e.g. Ford et al., 2010; Grasso et al., 2013; Turner et al,

2016), substance abuse (e.g., Bender, et al., 2014; Ford, et. al., 2013; Grasso, et al., 2013) and depression (e.g., Grasso, et al., 2013). Importantly, these findings echo the findings from variable-based analyses, suggesting that exposure to different types of victimization may have a bigger impact than exposure to repeated incidents of the same type of victimization on a wide range of mental health outcomes (e.g., Finkelhor, Turner, Hamby & Ormrod, 2011).

While the studies on poly-victimization carried out to date offer important insights into different patterns of poly-victimization and relation to outcomes, they also present some limitations. Firstly, all previous LCA studies have been cross-sectional – they included a single assessment point asking participants to report on their past experiences (with reference to their life-time or past year experiences). Thus they provide limited insights into the developmental patterns of different types of poly-victimization across adolescence. Furthermore, the existing longitudinal studies, all of which were based on variable-centred analyses, as well as the LCA studies, have used large age-ranges grouped together when looking at poly-victimization. As a result they draw conclusions about 10-17 (Finkelhor, et al. 2007; 2009), 12-17 (Radford et al, 2013), 13-18 (Adams, et al., 2016); 7-17 (Grasso, et al., 2013) or 14-20 (Aebi, et al., 2015) year olds as a group. Although it is useful to group age ranges in order to gain an initial insight into a phenomenon, it can mask a great amount of heterogeneity of experience throughout adolescence.

A substantial body of research has documented the link between childhood victimization and a range of adverse developmental outcomes across the life span (e.g., Gilbert et al., 2009; Takizawa, Maughan, & Arseneault, 2014; Widom, Czaja, Bentley, & Johnson, 2012). While fewer studies have examined the effects of adolescent victimization on outcomes, those which compared the effects of childhood versus adolescent victimization (e.g., Catajar, et al., 2010; Ireland, Smith, & Thornberry, 2002; Thornberry, Ireland, & Smith, 2001) found that victimization during adolescence had a greater negative impact on a variety of outcomes over the life-course, including internalizing and externalizing problems, substance use, and delinquency. This finding is not surprising given that adolescence has been described as the second most critical developmental period, next only to infancy, characterised by rapid neuro-biological, socio-cognitive and emotional development (e.g., Cromer, 2011; Luciana, 2013; Smith, Ireland, & Thornberry, 2005). This period of rapid changes also represents vulnerability during which both risk and protective factors may exert a greater impact on the various developmental processes (Steinberg, 2005). Multiple developmental transitions can increase stress on the adolescent, which in turn can increase the risk for the onset of mental health difficulties

(Cicchetti & Rogosch, 2002; Fuhrmann, Knoll, & Blakemore, 2015) even without the experience of victimization.

Victimization during adolescence may lead to severe negative outcomes through a variety of adolescent-specific processes. For instance, it has been suggested that the greater independence and autonomy of adolescents may enable their access to illegitimate coping strategies when experiencing victimization (e.g., Garbarino, 2017). Furthermore, in families with harsh parenting the striving of adolescents for greater independence in the face of parental control may lead to tension and maladaptation (Straus, 1988). According to general strain theory (Agnew, 1992; 2001) due to their greater cognitive maturity, adolescents may be especially stressed by adverse conditions they are not able to escape from, such as an abusive home, and as a result they are more likely than young children to react by engaging in delinquent behaviors. Delinquency may mask the underlying experiences of victimization during adolescence and thus further exacerbate its effects on other developmental outcomes. In addition, given their cognitive and physical development, adolescents may be better able to defend themselves thus may be viewed, by some, as initiators of violence, rather than victims of such acts. For some teachers, parents and mental health practitioners, it may be easier to see a young child as a defenceless victim and thus offer help and support as first response but to focus on adolescents' maladaptive behavior in general or prior to exploring the reasons. Taken together, given the negative effects of adolescent victimization on a variety of mental health and behavioral outcomes it is likely that poly-victimization has an even more pronounced impact in adolescence than in childhood as it may impact a variety of developing processes during this highly sensitive developmental period.

Exposure to situations carrying a risk of different types of victimization increases from childhood to adolescence. Given the social, emotional and cognitive advances experienced by adolescents, the time supervised by care-givers in the family home decreases, and the time spent with peers in school and later also in unstructured environments increases throughout adolescence. According to Finkelhor's (2007) developmental theory of victimology and poly-victimization, this change in activity structure leads to an increased risk of poly-victimization (Finkelhor, et al., 2009). The theory argues for a 'transitivity of risk' (Finkelhor, 2007, p. 35; Finkelhor, 2013) suggesting that young people exposed to parental maltreatment are more likely than non-victimized youths to also experience abuse by peers and others over their life-span. This is the case, as they are hypothesized to be less equipped with the social and emotional skills necessary to form friendships and engage prosocially with peers. As a result, they are more likely to experience peer rejection and victimization (e.g., Juvonen & Graham, 2014). On the basis of this theory, we would expect that 'poly-victimized youths' would be

young people who first experience victimization at home and later also victimization by peers at school and others in the community. However, the continuity of parental victimization may not be consistent across all youths who are poly-victimized.

Previous research documented inconsistent findings with respect to exposure to parental victimization over time. Finkelhor (2013) found that while additional victimization occurs, parental maltreatment continued to be important up to age 17; and elsewhere he (Finkelhor, 2007) reported that it increased with age. Similar findings have been reported by others (e.g. Thornberry, Ireland, & Smith, 2001) who in their sample of 1000 young people from a normative population found that the largest proportion reported to be maltreated in adolescence only (7.8%), in contrast to 6.1% in late childhood only and 3.5% in early childhood only. Furthermore, only 2.8% of the young people in this study reported having been exposed to parental maltreatment both in childhood and in adolescence. It is therefore possible, that some young people who are poly-victimized across the lifespan are persistently exposed to parental victimization throughout adolescence in addition to other types of victimization, whereas others may be experiencing primarily multiple types of non-parental victimization early or later in development.

Thus, several important research questions remain unanswered. For instance, no research to date has explored whether it is possible to identify distinctive groups of poly-victims across adolescence and whether poly-victimization increases or decreases between the ages of 11 and 17. Similarly, to date no studies have examined whether distinct groups of poly-victims are stable or variable over time, or whether they are distinctively related to youths' mental health and behavioral outcomes. In addition, very little is known about the changing relation between family-related, school-related and community related victimization over this key transition period. Thus, a longitudinal study of the exposure to victimization and poly-victimization over the course of adolescence will enable a better understanding of their dynamics during this key developmental period which may in turn contribute to developmentally sensitive prevention and intervention strategies.

The current study

The aim of the current study was to expand on previous research by examining different types of victimization and poly-victimization biennially measured at 4 time points (waves) across adolescence from age 11 to 17 years. First, we examined the prevalence of several types of victimization and poly-victimization. Next, we explored the patterns and continuity of poly-victimization across adolescence. In addition, we utilized a person-centred data analytic approach, longitudinal latent class analysis (LLCA; Collins & Lanza, 2013) to identify subgroups of adolescents with distinct victimization patterns based on their experiences of different

types of victimization at ages 11, 13, 15 and 17. Consistent with previous research (e.g., Butcher, et al., 2016; Turner, et al., 2016), we considered victimization in different contexts (school, home, street) and define victimization broadly to include peer violence, parental corporal punishment and sexual victimization. We utilized self-reported victimization data from a normative sample of adolescents.

As we were interested in exploring longitudinal profiles of adolescent (poly)-victimization based on four waves of data, we carried out LLCA analyses. Our study is the first to explore these longitudinal patterns, and therefore our goal was to inductively define groups of youths with no a priori assumptions. However, consistent with previous studies, which utilized LCA based on comparable, normative samples to ours (e.g., Ford et al., 2010; Turner et al., 2016), we anticipated that our analyses would distinguish a group of adolescents with a generally low victimization profile, as well as one to three poly-victimization groups with distinct victimization profiles across adolescence. It was expected that one of the poly-victimization groups might represent young people who have been consistently victimized by their caregivers and later also peers and others in school and in the community. Another group was expected to be represented by young people who experience early parental victimization but later primarily experience different types of peer victimization. Moreover, in line with previous cross-sectional findings (e.g., Adams, et al., 2016), we predicted that poly-victimization profiles characterised by a greatest number and variety of experienced victimizations across time will be associated with increased levels of behavioral and emotional problems, including substance use and delinquency and less prosocial behavior at age 17.

Our study also provided an initial exploration of the question whether the observed differences in poly-victimization profiles may be related to or explained by gender, socio-economic status (SES) or ethnic minority status. While information is sparse in relation to any of these socio-demographic variables and poly-victimization, there is some evidence for gender differences and differences based on SES in the prevalence rates of specific types of victimization. For instance, researchers have reported higher rates of sexual victimization in females (e.g., Averdijk, Eisner, & Mueller-Johnson, 2011; Radford, et al., 2013), more victimization by peers in males (Radford, et al., 2013), as well as more corporal punishment by parents in males (e.g., Gershoff, Purtell, & Holas, 2015; Schneider, MacKenzie, Waldfogel, & Brooks-Gunn, 2015). Similarly, previous research suggests that young people from families with low SES are more likely to be victimized by their parents (e.g., Eckenrode, Smith, McCarthy, & Dineen, 2014; Pfeiffer, Wetzels & Enzmann, 1999) as well as their peers (e.g., Jansen, Veenstra, Ormel, Verhulst, & Reijneveld, 2011). Given these findings, we wondered whether girls versus boys and young people from different SES backgrounds may follow different poly-

victimization patterns, or fall into different groups. To address this question, we carried out analyses to examine the role of gender and SES in probabilities of class membership. Furthermore, while previous studies do not offer support for the direct effect of ethnic minority status on exposure to victimization generally (e.g., Mehari & Farrell, 2013), higher rates of parental maltreatment were found in a German study for youth with a migration background compared to youth born to German parents (Pfeiffer, Wetzels & Enzmann 1999). Given the composition of our sample, we also explored the role of parental immigration status on poly-victimization class membership.

Understanding different poly-victimization profiles spanning adolescence and their relation to a range of behavioral outcomes as well as demographic variables will aid researchers and practitioners in identifying young people at risk of specific types of poly-victimization and addressing their specific needs.

Method

Sample

Participants were drawn from the BLINDED STUDY – a longitudinal study spanning 10 years and including 8 waves of data collection. The target sample size at wave 1 was 1,675 first graders from 56 schools in Zurich, Switzerland, which were stratified by school size and socioeconomic background of the school district (Eisner & Ribeaud, 2007). For the purposes of this study we utilized data self-reported by the youths during the most recent four waves, at ages 11, 13, 15 and 17, reporting about their experiences in the previous 12 months. This age range was selected due to the focus of this study on poly-victimization in adolescence. To assess outcomes we relied on data reported at age 17 by the youths, their classroom teachers or vocational trainers.

Following BLINDED COUNTRY/LOCATION regulations, parental consent was acquired for the youths' participation up to age 11; from age 13 onwards, active consent was acquired from the participating youths and up to age 15 parents were given the possibility to opt out their child from participation. At age 13 youths were offered a financial incentive worth approximately 30 USD, at age 15 50 USD and at age 17 60USD. Prior to this, a family incentive of approximately the same amount was offered to the parents who participated in computer assisted parent interviews in the first four waves of data collection.

Participants with any available information related to any type of victimization at each of the waves were included in the analyses. Of the 1675 youths in the initial sample, 1147 (68%) participated in the study at age 11, 1364 (81%) at age 13, 1447 (86%) at age 15 and 1305 (78%) at age 17. The data of all 1523 participants, who completed at least one questionnaire between ages 11 and 17, was utilized in the analyses. Preliminary

analyses revealed no significant differences in the baseline characteristics measured at age 7 (gender, SES, immigration status) of youths who participated versus did not participate at later waves of data collection. Of the 1523 participants 52% (n = 785) were boys; 11% were born outside of Switzerland and 46% (n = 538) of the 1179 youths for whom this information was available had both parents born abroad (representing more than 80 countries of origin).

Measures

Youths and their teachers were administered paper and pencil questionnaires which assessed the young people's social, emotional and behavioral development and experiences, including different types of victimization with reference to the past year. Youths completed surveys in a classroom setting and teachers were administered theirs via a postal survey.

Victimization measures

Corporal punishment. Youths answered three (at age 11 & 17) and four (at age 13 & 15) questions adapted from the Alabama Parenting Questionnaire (APQ; Shelton, Frick, & Wootton, 1996) tapping a range of corporal punishments at each age. The questions asked whether parents slapped (at ages 11, 13, 15, & 17), hit them with a stick, a belt or another object (at ages 13, 15, & 17), had spanked (at ages 11, 13, & 15), or had pulled their hair to discipline them (at ages 13, 15, & 17). Each question was rated on a scale from 0 (never), 1 (rarely), 2 (sometimes) to 3 (often/always). The individual items were used in the analyses in order to tease out any particular patterns in poly-victimization. Variables which were not assessed at a specific age, for instance whether parents hit their children with objects, which was not asked at age 11, were not included in the analyses as they were missing by design, thus not missing at random (NMAR). Approaches to handle missing data such as maximum likelihood (ML) estimation, which provides unbiased parameter estimates to address missing data, do so when data are missing at random (MAR), they do not adequately address missingness when data are NMAR (see BLINDED REFERENCE for further information on attrition in the specific study).

Peer victimization/bullying. At each age youths answered four questions adapted from Olweus (1993), which asked them about their experiences of being physically attacked, ignored or excluded, insulted or taunted and having had their belongings taken or destroyed. They rated the frequency of each of these experiences on a scale from 0 (never), 1 (1-2 times), 2 (3-10 times), 3 (approximately once a month), 4 (approximately one a week), to 5 (almost/daily). The individual items were utilized in the analyses.

Assault and robbery victimization. At each wave youths were also asked to report whether they had been assaulted with a weapon, assaulted without a weapon or robbed by peers at ages 13 and 15 and overall (by peers or adults) at age 17. Each dichotomous item was included in the analyses individually.

Sexual victimization. At ages 13, 15, and 17, on the same six-point scale as above, youths were also asked to report the frequency with which they had been subjected to sexual harassment by their peers. In addition, they were asked whether they had been subjected to sexual assaults perpetrated by peers at age 13 and 15 and overall (by peers or adults) at age 17. These items were used in the analyses separately.

Behavioral and emotional outcome measures

Prosocial behavior, aggressive behavior and symptoms of anxiety/depression were measured using the Social Behavior Questionnaire (SBQ; Tremblay et al., 1991) administered to the participating youths, and their teachers when the youths were 17 years old. For 426 youth information was provided by their classroom teacher, for 145 by their vocational teacher and for 470 by both. Where information was available from both teachers, the average score was included in the analyses. Previous research has supported the reliability and validity of the SBQ, including as applied to the current sample (BLINDED REFERENCE). The teacher subscales measuring prosocial behavior consisted of six items ($\alpha = .90$), and anxiety/depression consisted of seven items ($\alpha = .89$). The aggressive behavior subscale consisted of 11 items ($\alpha = .84$) and included reactive, physical, and proactive aggression. The youth subscales measuring prosocial behavior and anxiety/depression each consisted of eight items ($\alpha = .81$ and $.82$, respectively) and aggressive behavior was measured by nine items ($\alpha = .80$). Each item was rated on a 5-point Likert scale ranging from 1 (never) to 5 (very often).

Delinquency. Youths were asked whether they had engaged in 14 different acts of delinquent acts in the past twelve months, including stealing at home, shoplifting more/less 50 CHF, stealing a vehicle, driving without a license, breaking into a car/shop, drug dealing, damaging property, vandalism, threat with a weapon, forced sexual acts, threatened to take things, robbery, assault. The 14 dichotomous variables were combined into a variety score by dichotomising each item and adding up incidences.

Substance use. Youths were also asked to rate on a scale from 1 (never) to 6 (daily), the frequency with which they used eight different types of substances in the previous twelve months, including beer/wine/liquors, THC, ecstasy, (met-)amphetamine, cocaine, LSD/psilocybin, anabolic steroids, and hard drugs. We used both a substance use variety score by dichotomising each item and adding up incidences as well as the average frequency of all substances in order to check the robustness of findings. Consistent with previous studies utilizing a normative sample of adolescents (e.g., Romer, 2010), the prevalence of substance use in our sample

was overall low. Given this and in order to ensure comparability of findings, we followed the procedures reported in previous studies (e.g., Bender, et al., 2014; Ford, et al., 2013; Grasso et al., 2013) and combined all substances into one variable ‘substance use’.

Analytical procedure

A poly-victimization score for each participant was computed by assigning a score of ‘0’ or ‘1’ based on the experiences of each type of victimization in the last 12-months. These were then added up to yield a score for poly-victimization which ranged from 0-10 at age 11, 0-13 at ages 13 and 15 and 0-12 at age 17 (see Table 1). This was then re-coded to differentiate five groups – no victimization, 1, 2-3, 4-5 and 6 and more different types of victimization (see Table 2, Figure 1). For the purposes of descriptive analyses (Table 3), the youths who reported experiencing victimization levels which put them in the highest 10% of the sample at each age, were classified as poly-victims.

Based on the above reviewed literature, we were interested in exploring whether it was possible to identify different sub-groups of poly-victimization across adolescence. Therefore, as mentioned above, we carried out exploratory longitudinal latent class analyses (LLCA; Hagenaars, & McCutcheon, 2002; Collins & Lanza, 2013). In order to group youths based on their experiences of victimization from age 11 to 17, we completed an LLCA based on the individual items, thus utilizing a mixture of categorical/dichotomous and continuous variables. LLCA allows grouping individuals into latent classes based on their observed pattern of responses to specific questions asked at multiple time points. Each participant is assigned a set of probability estimates showing the likelihood of membership in each latent class; summed to 1 for each individual. The probabilities provide information about an individual’s most likely class membership. All analyses were carried out in *Mplus 7.31* (Muthén & Muthén, 2014), using robust maximum likelihood estimation (MLR) as it provides parameter estimates which address missing data. All individuals with at least one data point for any given variable were included in the analyses. For the number of missing cases per variable over time see Table 1.

Identification of classes

To identify the number of classes which best describe our data we ran a number of LLCA models specifying one through four classes ($k = 1-4$). We compared each of these models on a set of criteria recommended by Nylund, Asparouhov and Muthén (2007) and employed in previous research (e.g., Erosheva, Matsueda, & Telesca, 2014; Finch & Bronk, 2011) to choose the best fitting model with the optimal number of classes. The criteria included hypothesis testing indices to assess model fit: the p-values of the Lo-Mendell-Rubin Likelihood Ratio Test (LMR) and the Vuong-Lo-Mendell-Rubin Likelihood Ratio Test (VLMR), as well

as the parametric bootstrap likelihood ratio test (BLRT), each of which reveal whether a model with k -classes provides a significantly better fit than a model with one less class ($k-1$; Berlin, Williams, & Parra, 2014). In addition, we used statistical information criteria: sample-adjusted Bayesian information criteria (saBIC), Akaike's Information Criterion (AIC), in which lower (more negative) values represent greater classification qualification quality; and entropy value, a measure of classification accuracy (measured from 0 to 1 in Mplus; Muthén & Muthén, 2014) with values approaching 1 indicating a clearer delineation of classes (Celeux & Soromenho, 1996). Furthermore, based on the recommendation by Muthén and Muthén (2014), we also examined the classification probabilities for the most likely latent class membership and considered whether the classes were theoretically meaningful (Nagin, 2005).

Interpretation of classes

After a model was selected based on the criteria above, we examined the odds ratios for the dichotomous indicators and means for the continuous indicators of victimization within and between each of the classes to identify how the classes differed from each other with regard to victimization types at the different time points. The significance level of the likelihood of endorsing any of the dichotomous variables more or less in each class is provided in the Mplus output. To test whether the youths in each of the classes differed from each other significantly on any of the continuous victimization variables, we carried out a set of univariate ANOVAs in IBM SPSS 22 with post-hoc contrasts (see Table 5). These analyses allowed us to identify the distinctiveness of the classes on each type of victimization from age 11 to 17. Finally, to further describe the classes, we utilized zero-order correlations to examine the relation between posterior probabilities of class membership and a series of behavioral and emotional outcomes, as well as independent samples t-tests to explore possible gender differences.

Results

Descriptive statistics

Individual frequencies of each of the victimization types are presented in Table 1. They represent the number of youths who endorsed any of the victimization items at each age. Notably, and consistent with previous literature (e.g., Finkelhor, et al., 2007) the most frequently reported type of victimization was the experience of being bullied by peers. For most types of victimization, the proportion of youths affected decreased over the four ages. From Table 1 it is evident that with increasing age fewer youths were reporting experiencing peer violence – including robbery, assault with and without a weapon as well as sexual assault. The pattern was similar for three of the four items tapping corporal punishment. The exception was being

slapped, as more youths reported being slapped at age 13 and 15 than at age 11 or 17. A gradually declining pattern was also observed in the bullying items, with slight oscillations. Namely, compared to percentages at age 11, at age 13 slightly more youths reported having their belongings taken and being insulted or taunted. At age 15, more youths reported being ignored/excluded and sexually harassed than at age 13. However, all forms of bullying went down by age of 17 compared to age 11.

Table 2 examined the number of different types of victimizations at each age. In order to enable comparison with other poly-victimisation research, the table structure was modelled after the format commonly used in this literature, for instance Pereda et al (2014, table 3)'s work on poly-victimization in a community sample of Spanish youth, or Cyr et al's (2013, table 3) study of Canadian youth. Table 2 and Figure 1 show that depending on age between 16% and 25% of the sample were in the no victimisation group, a similar number were victimized once, at age 11 23 % were victimized more 4-5 times while at age 17 this occurred to only 10%. In the highest poly-victimisation group were 13% at age 11 compared to only 3% at age 17. Thus, the number of youths experiencing 6+ victimizations as well as those experiencing 4-5 victimization types consistently declined from age 11 to 17. On the other hand, the number of youths experiencing 2-3 types of victimization, and 1 type of victimization consistently increased with age. The average number of victimization types decreased at each wave, from highest levels of 3.39 at age 11 to 2.40 at age 17.

Poly-victimization prevalence over time

There was some stability of poly-victimization over time. As shown in Table 3, of those classified as poly-victim at age 11, 28.4% were also a poly-victim at age 13, 27% were poly-victims at age 15, and 18.2% at age 17. Of those who were classified as poly-victims at age 13, 41.8% remained in this category at 15, and 27.4% at 17. Finally, 31.6% of those classified as poly-victims at 15 were also classified at age 17. The association between poly-victimization at two time points was consistently statistically significant at $p < .002$. This suggests that poly-victimization at two age points does not occur by chance.

Poly-victimization patterns over time

Identification of classes

Table 4 presents fit statistics for the LLCA models featuring two to four classes. The LMR, VLMR and BLRT p values were key in guiding our decision-making and indicated that the three-class solution best describes our data. As outlined above, the LMR, VLMR and BLRT indicate improvement in fit compared to a solution with one less class. While the BLRT p value was statistically significant at $p < 0.001$ for the two, three and four-class solution, the LMR and VLMR were only statistically significant for the three-class solution, $p <$

.0276 and $p < .0272$, respectively. This suggests that compared to two classes, having the third class helps to better describe the data, whereas the fourth class does not add further improvement. Moreover, the saBIC and AIC for the three-class solution were lower than that of the two-class solution, suggesting a better fit for the three-class solution. While the saBIC and AIC were yet lower for the four-class solution, suggesting a yet better fit, the LMR and VLMR were not significant for the four-class solution. Entropy for the selected solution was high. In addition, the classification accuracies for the most likely latent class membership in the three-class solution were high (97, 93, and 98% respectively in each class), each of the three classes appeared to consist of a sufficiently large group of youths, and the interpretation of the three classes suggested three distinct and meaningful groups. Taken together, a three-class solution was deemed as the best fit.

Interpretation of classes

Table 5 presents the means of the continuous variables in each class and odds ratios for the probabilities of experiencing any of the dichotomously assessed variables. Three groups emerged: the largest group (72%) had overall *low victimization (class 1)*, the second largest (19%) experienced *non-parental poly-victimization (class 2)*, while the smallest group (8%) was characterised by having experienced the highest levels of *long-term parental victimization over time (class 3)*. Classes were differentiated on pattern as well as severity.

Specifically, the '*low victimization group*' of youths comprising class 1 (558 girls; 552 boys) experienced the lowest rate of both corporal punishment and bullying victimization from age 11 to 17; significantly lower than class 3 at $p < 0.001$. The means in class 1 were also significantly lower than class 2 at $p < 0.001$ on all of the bullying victimization items but only a few of the corporal punishment items. Namely, compared to youths in class 2, youths in class 1 were significantly less likely to have their hair pulled at age 11 and have been slapped at age 11 and 13. Furthermore, youths in class 1 consistently reported having lower probabilities than youths in class 2 or 3 of experiencing robbery, physical or sexual assault from age 11 to 17. Thus, class 1 represents the group of youths with the least amount or likelihood of victimization and poly-victimization.

In class 2, the '*non-parental poly-victimization group*' (125 girls; 171 boys), with the exception of three items mentioned above, youths reported experiencing similar levels of corporal punishment on most items compared to class 1 over time. However, they reported having consistently experienced significantly less corporal punishment than youths in class 3 from age 11 to 17. On the other hand, they reported experiencing significantly higher levels of bullying from age 11 to 17 than class 1 as well as class 3 with a few exceptions –

similar levels of physical attacks in class 2 and 3 at age 11 and 17, as well as belongings being taken at age 17 and sexual harassment at all assessed ages (13, 15, 17). The odds ratios of the dichotomous variables revealed that they were also more likely than youths in class 1 to experience robbery, physical or sexual assault from age 11 to 17. In addition, they were also significantly more likely than youths in class 3 to experience robbery at age 13 and 15, assault without a weapon at age 13 and 15, as well as assault with a weapon at age 15. On the other hand, compared to youths in class 3, they were significantly less likely to be robbed, or assaulted with or without a weapon at age 11, assaulted with a weapon at age 13, and assaulted without a weapon at age 17. Thus, class 2 represents the group of youths with highest amounts and likelihood of experiencing different types of non-parental victimization (at school, outside of school, in the community) over time, and lower levels of corporal punishment than youths in class 3.

Finally, youths in class 3, the '*long-term parental victimization group*' (55 girls; 62 boys) reported having been exposed to higher levels of corporal punishment from age 11 to 17 than youths in class 1 or 2. They experienced more bullying across time than youths in class 1 but less than youths in class 2, with the few exceptions mentioned above. The odds ratios of the dichotomous variables suggested that youths in class 3 were more likely to experience all types of peer victimization than youths in class 1. However, compared to youths in class 2, they were only more likely to experience robbery, and assault with and without a weapon at age 11, assault with a weapon also at age 13, without a weapon also at age 17, and robbery also at age 17. Thus, class 3 represents the group of youths with the highest amounts of persistent parental victimization across adolescence and medium amount or probability of experiencing all other types of victimization.

Table 6 presents the mean levels of victimization types in each class which revealed significant linear trends at each age, suggesting that youths in class 3 experienced the highest level of victimization/poly-victimization, followed by youths in class 2 and finally youths in class 1 who experienced least amount of victimization. Post-hoc contrasts confirmed significant differences between the means with the exception of one. At age 11, the level of victimization in the two poly-victimization groups were not significantly different. The three classes showed different trajectories over time (see Figure 2). Linear trends were observed for class 1 and class 2 ($p = <.001$). By contrast, class 3 showed a quadratic trend ($p < .001$).

Relation to outcomes

The partial correlations between the probabilities of class membership and a range of outcomes based on the young person self-reports and teacher reports at age 17 revealed a distinct pattern of relations for each of the classes/groups (see Table 7). Namely, higher probabilities of membership in class 1 – low overall

victimization from age 11 to 17 – were related to less anxiety/depression as well as aggression at age 17 according to both informants. They were also related to more prosocial behavior according to the teachers and less delinquency and substance use overall, as well as alcohol and drug use separately according to the youths. On the other hand, the probabilities of membership in class 2 – non-parental poly-victimization from age 11 to 17 – were related to more aggression according to both informants, less prosociality according to the teachers and more anxiety/depression according to the youths. They were also related to more self-reported delinquency and substance use overall, but only alcohol use, not drug use when examined separately. In contrast, the probabilities of membership in class 3 – long-term parental victimization from age 11 to 17 – were related to more anxiety/depression according to both the teacher and self-reports. Based on the self-reports they were also related to more aggression but not delinquency or any type of measured substance use, unlike the non-parental poly-victimization probabilities. This was the case, despite controlling for possible confounding variables: self-control, anxiety/depression and aggression; all assessed at age nine.

The independent samples t-tests on the probabilities of membership in each class for males and females were statistically significant for class 1 and class 2; the low victimization and non-parental poly-victimization groups; such that females had higher probabilities to be in the low victimization group than males ($t = -2.359$; $p = .018$); while males had higher probabilities to be in the non-parental poly-victimization group ($t = 2.578$, $p = .010$). Notably, however, females and males did not differ in their probabilities with respect to membership in the long-term parental victimization group.

In addition, we explored the possible influence of socio-economic status and ethnicity on class membership. In this study, we utilized the International Socio-Economic Index of Occupational Status (ISEI, Ganzeboom & Treiman 1996) to assess socio-economic status. The index yields four quartiles based on occupation. Given the diverse nature of the study sample with respect to country of origin we utilized the parents' migration background as a proxy to assess the effect of ethnicity. If both parents (or single caregivers in single-parent households) were born abroad, the variable was coded 1, otherwise 0. Based on this definition, 46 percent of the sample's households had a migration background.

Chi-square tests suggested that the probabilities of class membership were related to both socio-economic status $\chi^2(6) = 24.015$, $p = .001$, and migration background $\chi^2(2) = 18.284$, $p < .001$. Specifically, more young people (59%) in class 3 (long-term parental victimization) had two parents born outside of Switzerland, whereas 41% of those who comprised this class had at least one Swiss-born parent. On the other hand, class 2 (non-parental victimization) consisted largely (64%) of those with at least one Swiss-born parent and 36% with

both parents born outside of Switzerland. Class 1 (low victimization) comprised of 55% of young people with at least one parent born in Switzerland and 45% of those with both parents born outside Switzerland.

With respect to socio-economic status based on occupation, class 3 (long-term parental victimization) consisted of 39% of young people in the lowest quartile (lowest SES) based on parental occupation, 29% were in the second quartile, 16% in the third quartile and 15% in the highest quartile (highest SES). In contrast, young people in the lowest quartile (lowest SES) represented the smallest percentage in class 2 (non-parental victimization; 18%). In fact, the largest percentage of young people in class 2 were in the third quartile of SES (33%), followed by comparable rates of young people in the highest quartile (25%) and second quartile (24%). Finally, the distribution of young people in class 1 (low victimization) was relatively balanced with respect to SES quartiles (27%, second 22%, third 25%, highest 26%).

Discussion

Poly-victimization is an important risk factor for a range of mental health and other developmental outcomes (Finkelhor, et al., 2011). Research has been accumulated about poly-victimization with respect to its short-term and life-course prevalence, its risk factors as well as links to a variety of outcomes. However, much less has been known about poly-victimization developmentally, particularly during adolescence. In this study, we set out to examine the levels of victimization and poly-victimization in a normative sample of early to late adolescents. In addition, we extended previous research by carrying out longitudinal person-centred analyses and identified three sub-groups of youths based on their experiences of victimization from age 11 through 17 – a low victimization group, non-parental poly-victimization group and long-term parental victimization group.

Specifically, our findings showed that at each age group at least three quarters of the sample had experienced victimization, and of this the great majority involved multiple types of victimization, as only about 15% to 22% of the total sample had experienced just one victimization type. However, among the youths who experienced multiple victimizations the largest group was consistently that with 2-3 different types of victimizations (ranging from 32% to 39% depending on the age at which this was assessed). The very high end of multiple victimization involving 6+ types was relatively rare (ranging from 3 to 13% depending on the age of assessment). Thus, while experiencing 6+ victimizations is less common than experiences of 2-3 types of victimization, consistent with previous research (e.g., Cyr et al., 2013; Finkelhor, et al., 2005, 2009; Pereda, et al., 2014), victimization and poly-victimization is relatively common in this sample. However, inconsistent with previous reports, which, based on cross-sectional data, found increases in poly-victimization in different age groups (Finkelhor, et al., 2011), our findings revealed a decreasing pattern. At each subsequent age fewer youths

reported having experienced 4-5 types or 6+ victimization types. By contrast the number of youths who reported experiencing 2-3 types of victimizations increased with age. This divergence in findings may be due to the types of victimizations assessed in this study versus others. Unlike previous studies, each of which included different types of victimization and abuse, we did not assess at each age, for instance, violent victimization by adults (with the exception of corporal punishment by caregivers). Up to age 15, our study focused on exploring primarily direct victimization by peers at school as well as outside of the school/home environment. At age 17, the questions assessing out of school/home environment were expanded to include victimization by peers or adults; however, they did not differentiate between the two perpetrators. Most of the victimization studies which reported that poly-victimization rates were higher among older adolescents than younger adolescents included victimization by adult perpetrators (e.g., Finkelhor, et al., 2009). Moreover, the studies with reported increases of poly-victimization at older ages were carried out in North America. It is also possible that Switzerland represents a 'safer society' in which the most dangerous time is childhood and early adolescence when one may be exposed to the potential of victimization by parents and peers, but once older this danger recedes. As we did not measure or differentiate victimization by adults systematically, these are interpretations which present questions for further research. Nevertheless, the relatively high rate of multiple types of victimization over time, across adolescence, further highlights the importance of early identification of victimized young people, in order to intervene promptly.

Our latent class analyses provide additional insights into the different patterns of long-term victimization to which young people are exposed. The good news is that the largest group we found represented young people who were least likely to be victimized at any given time through any type of victimization. However, we also identified two sizable groups of young people with distinct patterns of exposure to poly-victimization over time. One group (non-parental poly-victimization) represented youth who were most likely to be exposed to bullying at school from age 11 to 17. Youth in the other group (long-term parental victimization) were in turn most likely to be exposed to parental violence from age 11 to 17. In other words, youths exposed to more corporal punishment each year from age 11 through 17 were not the same youths who were more likely to experience bullying at school. Interestingly, however, young people in both groups reported experiencing violent victimization outside of their home and school, however at different times. Therefore, it is possible that both victimization at home and bullying at school are risk factors (as well as precursors) for violent victimization outside of these organised settings. Importantly, our analyses did not identify a (or more) group/s of young people who would have experienced only one type of victimization over time. Thus, these findings

lend further support to the importance of poly-victimization both as a concept as well as the experience with possible serious consequences. It has implications for mental health providers working with young people or adults who have been victims of violence, as they have to be aware and sensitive to the fact that their clients' histories may involve continued parental abuse or school bullying in adolescence.

Our findings further suggest persistence of both parental corporal punishment and school bullying, if in different groups of young people, across adolescence. It appears that once a young person is exposed to one or the other type of victimization this continues throughout their adolescence. Future research will need to examine whether factors which have been identified as leading to exposure to different types of victimization at any given time (such as parental substance use and parental depression) are also the factors which maintain this exposure across adolescence. Similarly, what stops the cycle of each victimization will need to be explored; maturation and moving away from home or one's old school seem like plausible candidates.

Based on these results alone our findings are inconsistent with previous literature (e.g., Turner et al., 2016) which identified a group of youths exposed to abuse at home who also experienced higher rates of victimization at school, including bullying. Importantly, however, while we only included abuse by parents in the home, Turner et al. (2016) assessed victimization by both peers (e.g., siblings) and adults in the home and at school and found that youths in their sample were much more likely to be victims of abuse by juvenile family members ($r = .74$) than adults ($r = .20$). Furthermore, unlike Turner et al. (2016), our analyses did not include any parentally perpetrated victimization other than corporal punishment. In addition, as the analyses presented by Turner et al. collapsed over youths aged 10 to 17 and only included one measurement of lifetime victimization, it is possible that inclusion of multiple measurements assessing past-year victimization, similar to that in this study, would provide comparable profiles. Together our findings suggest that it is important to differentiate between victimization by peers versus adults in the home. It is possible that the youths who are victimized at home by their siblings specifically are more likely to be also victimized at school than those who are physically abused by their parents. Future research may examine this hypothesis.

The two poly-victimization classes were further differentiated by the age at which the youths in each class experienced out of school violence. Specifically, youths in the long-term parental victimization group, were more likely to be exposed to all the assessed types of out of school violence, however only at age 11. On the other hand, youths in the non-parental poly-victimization group were most likely of the three classes to be bullied at school over time and also more likely to be exposed to various types of out of school violence at ages 13, 15, and 17, so starting later and for a longer period of time.

These divergent findings for the three groups may be explained by the developmental changes in social needs and interactions that youths undergo during early, middle and late adolescence. Pre-adolescents (10-11) would still normally spend more time at home than older adolescents (e.g., Larson & Richards, 1991). However, those who are corporally punished at home (the class 3 – mixed poly-victimized group) may not be as motivated to stay at home and spend more time away from home at an earlier age. Consistent with Finkelhor's (2007) theory of victimization, risk of victimization is increased by an individual's environmental condition. Spending more time outside of the home, and perhaps also outside of the school, thus makes them more vulnerable to serious types of peer violence which occurs outside of the home/school. Moreover, although not measured in this study, it is possible that the physical abuse experienced at home and reported by these youths from age 11 onwards, started much earlier. Such early and ongoing or repeated experiences of maltreatment have been described to have profound effects on children's abilities to develop adaptive social skills and coping strategies (Finkelhor, et al., 2009) to be able to self-protect, and hence they may ignore warning signs of danger (Herman, 1992) and become more vulnerable to other types of victimization. In addition, such experiences are more than likely to impact on the youths' sense of closeness and feeling cared for by their parents, both of which are aspects of family relationships which have been shown to serve as protective factors against violent victimization by peers (e.g., Tillyer, Tillyer, Miller, & Pangrac, 2011). We can see similar trends being supported in studies of adolescent runaways from abusive homes, who continue to be victimized once on the street and report elevated levels of physical as well as sexual street victimization (e.g., Bender, Ferguson, Thompson, & Langenderfer, 2014; Tyler & Beal, 2010).

On the other hand, it is possible that those young people who are bullied at school but less likely to be maltreated at home may be spending more time at home or in structured environments during this age period, thus making them less likely to be exposed to violent victimization at age 11. Whereas later on, in adolescence, fulfilling a key developmental shift towards spending more time with peers (e.g., Connell & Dishion, 2006), both groups may spend more time with peers and those already bullied may be more likely to be further victimized by peers and others outside of their school. As all young people spend more time with peers as they get older, it is possible that after age 11-12, those who are bullies at school also engage in violent victimization outside of school targeting the same peers. This interpretation is consistent with the findings from a recent meta-analysis which suggested that youths who are exposed to bullying at school are significantly more likely, by about one-third, to be victims of violent victimization later (Ttofi, Farrington, & Lösel, 2012). At age 17, it is youths from the long-term parental victimization group that are again more likely to be robbed or assaulted

without a weapon compared to youths in the non-parental poly-victimization group. However, unlike the assessment at previous ages, the age 17 items tapping these constructs, asked them with reference to both peer and adult perpetrators. It is therefore possible that these findings reflect increased perpetration of victimization by adult offenders. However, this too is a subject for further study.

Consistent with the recent findings by Turner and colleagues (2016), which suggest that poly-victimization is related to worst outcomes when victimization occurs in more than one context, our study also shows that experiences of negative behavioral and emotional outcomes were associated with both poly-victimization groups. Notably, young people in the two groups experienced different types of negative outcomes. According to the teachers, youth in the non-parental poly-victimization group were less prosocial and more aggressive and youths in the long-term parental victimization group were more anxious/depressed. Finally, youths in the low victimization group were more prosocial, as well as less anxious and aggressive. Similarly, according to the young people themselves, those in the low victimization group reported fewer mental health problems on all the assessed outcomes. On the other hand, young people in the two poly-victimization groups reported greater mental health problems. What differentiated between the two groups was the use of substances, which was only related to membership in the non-parental poly-victimization group (more likely to be bullied) group. These findings are consistent with others' citing links between experiences of being bullied and later substance use (e.g., Sigurdson, Wallander, & Sund, 2014) and delinquency (e.g., Wong & Schonlau, 2013). Thus, young people who are consistently bullied throughout adolescence appear to be at a particular risk for abusing substances. This again is important information for service providers who are encouraged to look beyond substance use problems and explore the underlying reasons, aware that bullying may be one of them.

The links we report here are of course in no way causal and may be due to processes of self-selection, differential association and/or contextual factors. However, even if they are preliminary, these findings not only provide further support for the distinctive nature of the identified groups, but also highlight the existence of multiple types of poly-victimization in a normative sample as has been previously found in clinical samples (e.g., Adams et al., 2016). Thus, our study further points to the importance of identifying this group of youths early on. Taken together our findings are consistent with previous work suggesting that both maltreatment and bullying increase the risk for violent victimization (e.g., Finkelhor, et al., 2011). It also offers new insights into the distinctiveness of groups of youths who experience maltreatment and early violent victimization versus bullying and later violent victimization. It is likely that the processes underlying these two types of poly-

victimization may be different and warrant further study in order to inform and fine tune current identification of youths at risk, their treatment as well as prevention of violent victimization.

In addition, our study provided an initial exploration of the question whether the observed differences in poly-victimization profiles may be related to gender. The findings suggested that adolescent girls and boys are equally likely to be exposed to parental victimization throughout adolescence (from age 12 to 17) but boys are more likely to be exposed to non-parental poly-victimization. Based on social roles and related social stereotypes adolescent boys are more likely to be seen as perpetrators than as victims of victimization. Given internalized societal stereotypes, it may also be more difficult for boys to admit to experiences of victimization for fear of being seen to be weak or non-masculine. For these reasons mental health professionals in schools and clinics may want to pay special attention to victimization in boys; particularly as it may be masked by aggression and engagement in delinquency. Our findings also highlight the need for further gender-based analyses when understanding developmental patterns of poly-victimization.

Finally, our analyses suggested that persistent parental victimization was most likely to occur in young people with both parents born outside of Switzerland as well as those whose parents held jobs representing the lowest SES. Future analyses will need to examine variation based on different cultural backgrounds in order to determine how much of this may be explained by acceptable parental practices in different cultures. Similarly, plausible mediators and moderators of the link between low SES and parental victimization (such as parental depression) will need to be explored in order to explain this link. It is clear, however, that mental health professionals ought to pay special attention to young people who present with these broad (and likely distal) risk factors. On the other hand, the largest proportion of young people who were in the non-parental victimization group were those with at least one parent born in Switzerland as well as young people whose parents held jobs representing the middle and highest SES. These findings highlight that much more also needs to be understood about the processes which link young people's parental background and parental occupation to their victimization by peers and others.

As any study, this study has some limitations leading to additional future directions for research. While we identified a sub-group of youths who are exposed to corporal punishment more than youths in the other groups, our information about parental victimization was restricted to this one type of maltreatment. While corporal punishment has been identified as one of the strongest risk factors for a variety of problem outcomes (e.g., Turner et al., 2012), future studies may examine the longitudinal co-occurrence of multiple types of maltreatment, such as parental neglect and sexual victimization as those may differentially contribute to

vulnerabilities to other types of victimization and negative mental health and behavioral outcomes. It will also be important to explore the person-based clusters based on a variety of additional victimization types that youths may be exposed to (such as witnessing inter-parental violence), in addition to the most common types of exposure included in our study. Other than parental abuse, our study primarily focused on peer victimization, with the exception of assault, robbery and sexual victimization, which at ages 15 and 17 included victimization by adults as well as peers. However, these two perpetrator types were not differentiated, which may have influenced our findings. Future studies should therefore examine exposure to victimization and poly-victimization by various perpetrators. In our study we assessed different victimization types bi-annually with reference to the past year, an annual or even more frequent assessment of victimization with a shorter recall period may offer additional insights into the patterns of change over time. Furthermore, it will be important to replicate these findings utilizing diverse samples and relying on reporting from a variety of sources. While there is a growing literature about the concurrent effects of these additional victimization types, much less is known about these patterns longitudinally and about their cumulative effect over time.

Despite these limitations, this study also has significant strengths: Its longitudinal design, spanning from age 11 through 17, thus covering two important developmental stages – from early adolescence to adolescence provides rich information about the experiences of different types of victimization in the past twelve months at each age. It is unlike other studies, which examine incidences (e.g., Radford et al., 2013; Finkelhor, et al., 2007) or latent classes (e.g., Adams et al., 2016; Turner et al., 2016) of poly-victimizations based on grouped age ranges (e.g., 11-17 and 10-17). The study used both descriptive (variable-based) and person-centred analyses utilizing longitudinal data. The latter approach revealed two distinct groups of youths who follow dissimilar paths of poly-victimization throughout adolescence; including with differential links to mental health outcomes. The two groups may call for a differential approach to identification and treatment and warrant further examination. Next steps should include the examination of the earlier experiences of adolescence, including the exploration of the predictors which may include earlier victimization but also other risk factors. Special focus should be given to the youths who are physically abused at home as they may be more difficult to identify by teachers at school, who may be the gatekeepers for early intervention.

Conclusion

Our findings lend further support to the importance of examining poly-victimization and demonstrate that even though there is some consistency of poly-victimization over time, poly-victims are not all created

equal. Different categories of poly-victims can be identified that are distinctive from each other not only in the number of ways in which they are victimized but also in the pattern and diversity of types of victimizations a young person is exposed to from age 11 to 17. Moreover, which pattern of poly-victimization a young person is exposed to, has implications for their mental health outcomes. Collapsing over large age ranges (e.g., 10 to 17) to examine patterns of poly-victimization may, therefore, not give us the full picture of this dynamic construct. Thus, this study highlights the importance of examining the patterns of poly-victimization over time in order to develop a more nuanced developmental understanding of these experiences. With this knowledge, better strategies can be developed for identifying youths at risk as well as developing better prevention and intervention strategies.

Table 1. Past-year prevalence of victimization

Past-year victimization													
	Age 11 (10 items; n= 1147)				Age 13 (13 items; n = 1364)			Age 15 (13 items; n = 1447)		Age 17 (12 items; n = 1305)			
	Items	missing	n	valid %	missing	n	valid %	Missing	valid %	missing	n	valid %	
Corporal Punishment													
	being spanked	3	225	19.7	5	150	11.0	1	128	8.9	-	-	-
	being slapped	0	219	19.1	7	279	20.6	1	273	18.9	15	218	16.9
	having ears or hair pulled	0	148	12.9	4	112	8.2	1	121	8.4	13	82	6.3
	hit with object	-	-	-	6	166	12.2	0	139	9.6	16	80	6.2
Peer Violence													
	robbery	3	140	12.2	0	112	8.2	3	64	4.4	1	43	3.3
	assault with weapon	3	181	15.8	5	97	7.1	4	75	5.2	1	28	2.1
	assault without weapon	4	179	15.7	2	142	10.4	4	108	7.5	4	51	3.9
	sexual assault	-	-	-	5	17	1.3	4	13	0.9	1	8	0.6
Bullying													
	physically attacked	2	470	41.0	3	355	26.1	6	285	19.8	2	116	8.9
	ignored/ excluded	2	587	51.3	2	653	42.9	3	698	48.3	2	565	43.4
	having belongings taken or destroyed	3	461	40.3	0	557	40.8	3	535	37	1	276	21.2
	insulted or taunted	2	691	60.3	4	829	61.0	9	842	58.6	6	635	48.2
	sexual harassment		-	-	4	255	18.8	2	300	20.8	3	256	19.7

Table 2. Number of different types of victimization

	11 years		13 years		15 years		17 years	
	n=1131	valid %	n=1324	valid %	n=1427	valid %	n=1273	valid %
No victimization	176	15.6	215	16.2	225	15.8	327	25.7
1 type of victimization	178	15.7	246	18.6	283	19.8	280	22.0
2-3 types of victimizations	369	32.6	433	32.7	538	37.7	500	39.3
4-5 types of victimizations	260	23.0	284	21.5	275	19.3	127	10.0
6+ types of victimizations	148	13.1	146	11.0	106	7.4	39	3.1
Mean number of victimizations among victims (SD)	3.39	(SD=1.96)	3.24	(SD=1.99)	2.93	(SD=1.75)	2.43	(SD=1.41)
Number of types of victimizations in the top 10th percentile of victims	6+		6+		5+		4+	

Note: Maximum number of victimizations at age 11 was 10, at age 13 and 15 it was 13, and at age 17 it was 12

Table 3. Percentage of poly-victims at each age who were also classified as poly-victims at a subsequent age.

	Age 13 Poly-victim		Age 15 - Poly-victim		Age 17 - Poly-victim	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Age 11 - Poly-victim (n=148)	42	28.4	40	27.0	27	18.2
Age 13 - Poly victim (n=146)			61	41.8	40	27.4
Age 15 - Poly victim (n=209)					66	31.6

* Percentages are based on the number of poly victims in each row. Reading example: 28.4% of the 148 poly-victims at age 11 were also classified as poly-victims at age 13.

Table 4. Fit statistics for the 2, 3 and 4 class solutions of Longitudinal Latent Class Cluster Analysis.

	2 Classes	3 Classes	4 Classes
LMR <i>p</i> value	0.010	0.0276	0.5837
VLMR <i>p</i> value	0.009	0.0272	0.5844
BLRT <i>p</i> value	<0.001	<0.001	<0.001
saBIC	96534.483	93887.169	92456.873
AIC	96254.763	93502.015	91966.287
Entropy	0.977	0.928	0.946
CProb %	97, 99	97, 93, 98	95, 98, 91, 97
CCP			
Class 1. n; %	144; 9.4%	1110; 72%	85; 5%
Class 2. n; %	1379; 90%	296; 19%	1118; 73%
Class 3. n; %		117; 8%	268; 17.5%
Class 4. n; %			52; 3%

Note: LMR – Lo-Mendell-Rubin Adjusted LRT test; VLMR – Vuong-Lo-Mendell-Rubin Likelihood ratio test; BLRT – bootstrap likelihood ratio test; sa BIC – sample-adjusted Bayesian information criteria; AIC – Akaike information criteria; CProb – classification probabilities for the most likely latent class membership; CCP – class count and proportions

Table 5. Latent class analysis solution and significant differences in latent class indicators.

	Class 1 n = 1110 (72%)	Class2 n = 296 (19%)	Class 3 n = 117 (8%)
	Low overall victimization	Non-parental poly-victimization	Long-term parental victimization
Age - Type of victimization	Mean (se)	Mean (se)	Mean (se)
By parents:			
11 - Spanked	0.360 (0.033) ^a	0.523 (0.093) ^a	1.354 (0.203)^c
11 - Slapped	0.318 (0.025) ^a	0.626 (0.088) ^b	1.342 (0.211)^c
11 - Hair/ears pulled	0.228 (0.027) ^a	0.548 (0.089) ^b	1.166 (0.212)^c
13 - Spanked	0.203 (0.024) ^a	0.329 (0.063) ^a	1.661 (0.258)^c
13 - Slapped	0.307 (0.031) ^a	0.612 (0.079) ^b	2.097 (0.248)^c
13 - Hit with belt/object	0.216 (0.036) ^a	0.295 (0.063) ^a	2.205 (0.419)^c
13 - Hair/ears pulled	0.151 (0.021) ^a	0.176 (0.047) ^a	2.057 (0.334)^c
15 - Spanked	0.167 (0.022) ^a	0.197 (0.058) ^a	2.029 (0.322)^c
15 - Slapped	0.301 (0.030) ^a	0.452 (0.067) ^a	3.417 (0.300)^c
15 - Hit with belt/object	0.148 (0.030) ^a	0.219 (0.052) ^a	2.726 (0.387)^c
15 - Hair/ears pulled	0.115 (0.019) ^a	0.086 (0.031) ^a	3.780 (0.794)^c
17 - Slapped	0.305 (0.030) ^a	0.389 (0.067) ^a	2.004 (0.288)^c
17 - Hit with belt/object	0.107 (0.030) ^a	0.159 (0.046) ^a	2.134 (0.475)^c
17 - Hair pulled	0.148 (0.031) ^a	0.113 (0.036) ^a	1.757 (0.451)^c
By peers:			
11 - Physically attacked	0.468 (0.047) ^a	1.354 (0.119)^b	1.091 (0.174) ^b
11 - Ignored/excluded	0.539 (0.049) ^a	1.592 (0.130)^b	1.311 (0.176) ^c
11 - Belonging taken/destroyed	0.487 (0.059) ^a	1.420 (0.188)^b	0.912 (0.135) ^c
11 - Insulted/taunted	0.678 (0.048) ^a	1.887 (0.136)^b	1.219 (0.138) ^c
13 - Physically attacked	0.249 (0.030) ^a	1.450 (0.208)^b	0.930 (0.157) ^c
13 - Ignored/excluded	0.509 (0.035) ^a	1.871 (0.235)^b	1.190 (0.156) ^c
13 - Belonging taken/destroyed	0.449 (0.035) ^a	1.674 (0.207)^b	1.082 (0.153) ^c
13 - Insulted/taunted	0.651 (0.043) ^a	2.207 (0.249)^b	1.551 (0.177) ^c
15 - Physically attacked	0.227 (0.024) ^a	1.121 (0.172)^b	0.671 (0.145) ^c
15 - Ignored/excluded	0.541 (0.033) ^a	1.689 (0.213)^b	0.995 (0.151) ^c
15 - Belonging taken/destroyed	0.428 (0.037) ^a	1.478 (0.134)^b	1.099 (0.137) ^c
15 - Insulted/taunted	0.655 (0.041) ^a	2.090 (0.242)^b	1.317 (0.145) ^c
17 - Physically attacked	0.166 (0.026) ^a	0.580 (0.098)^b	0.489 (0.145) ^b
17 - Ignored/excluded	0.483 (0.032) ^a	1.458 (0.165)^b	1.072 (0.137) ^c
17 - Belonging taken/destroyed	0.269 (0.027) ^a	0.999 (0.139)^b	0.774 (0.145) ^b
17 - Insulted/taunted	0.551 (0.035) ^a	1.732 (0.195)^b	1.056 (0.143) ^c
13 - Sexually harassed	0.319 (0.026) ^a	0.583 (0.087)^b	0.557 (0.117) ^b
15 - Sexually harassed	0.363 (0.027) ^a	0.590 (0.085) ^b	0.608 (0.131)^b
17 - Sexually harassed	0.349 (0.024) ^a	0.592 (0.091)^b	0.536 (0.136) ^b
	1 compared to 2 Odds Ratio	2 compared to 3 Odds Ratio	1 compared to 3 Odds Ratio
11 - Robbed	0.296**	0.767**	0.227**
11 - Assaulted with a weapon	0.287*	0.982**	0.282**
11 - Assaulted w/out a weapon	0.281**	0.897**	0.252**
13 - Robbed	0.258***	1.272**	0.328**
13 - Assaulted with a weapon	0.251**	0.964**	0.242**
13 - Assaulted w/out a weapon	0.164***	1.851**	0.304**
13 - Sexually assaulted	0.276 ns	0.914ns	0.252ns
15 - Robbed	0.206**	2.140*	0.441*
15 - Assaulted with a weapon	0.265**	1.090*	0.289*
15 - Assaulted w/out a weapon	0.239**	1.215**	0.290**
15 - Sexually assaulted	0.359ns	0.900ns	0.323ns

17 - Robbed	0.301*	0.849*	0.255*
17 - Assaulted with a weapon	0.281*	0.637ns	0.179ns
17 - Assaulted w/out a weapon	0.763*	0.425*	0.324*
17 - Sexually assaulted	0.351ns	0.483ns	0.169ns

Note: [†] $p = .06$; * $p < .05$; ** $p < .01$; *** $p < .001$; The table presents means for the continuous variables and odds ratios for the dichotomous variables included in the LLCA. Mplus provided p values for the ORs, but not for mean differences. Thus, for continuous variables univariate ANOVAs were carried out with post-hoc contrasts, different superscripts ^{a, b, c} indicate significant Bonferroni differences of $p < .001$ between each pair of classes; the same superscript signals no significant differences between respective classes. Bold font identifies the class with the highest level/probability of each victimization type.

Table 6. Mean numbers of different victimization types at each age by class membership for those who experienced at least one victimization.

	Class 1		Class 2		Class 3		Sig.
	Low victimization		Non-parental poly-victimization		Long-term parental victimization		
	M	SD	M	SD	M	SD	
Age 11	2.79 ^a	1.63	4.76 ^b	1.84	4.83 ^b	2.28	F(2,474) = 72.58***
Age 13	2.68 ^a	1.49	4.48 ^b	1.63	5.65 ^c	2.70	F(2,474) = 96.23***
Age 15	2.51 ^a	1.36	3.73 ^b	1.61	5.38 ^c	2.20	F(2,474) = 83.09***
Age 17	2.11 ^a	1.21	3.00 ^b	1.36	3.81 ^c	1.98	F(2,474) = 43.49***

Note: ^{a, b, c} Indicate significant differences of *** $p < .001$ between each pair of classes; the same superscript signals no significant differences between respective classes based on post-hoc contrasts. The means are in reference to the variety score – sum of dichotomised victimization types.

Table 7. Partial correlation between probabilities of class membership and behavioral outcomes at age 17, controlling for self-control, anxiety/depression and aggression at **age 9**.

		Class 1	Class 2	Class 3
Informant	Behavior			
Teacher	Prosocial	.069*	-.080**	.005
	Anxiety/depression	-.091**	.032	.105**
	Aggression	-.100**	.082*	.046
Young person	Prosocial	.010	-.037	.039
	Anxiety/depression	-.187***	.143***	.097**
	Aggression	-.187***	.143***	.097**
	Delinquency	-.131***	.120***	.038
	Substance use (frequency)	-.072*	.062*	.026
	Substance use (variety)	-.076*	.076*	.012

Note: Teachers (n = 896); vocational teachers (n = 615); young people (n = 1306). All

* $p < .05$; ** $p < .01$; *** $p < .001$

Figure 1. Percentage of respondents with different numbers of types of victimization at each age point

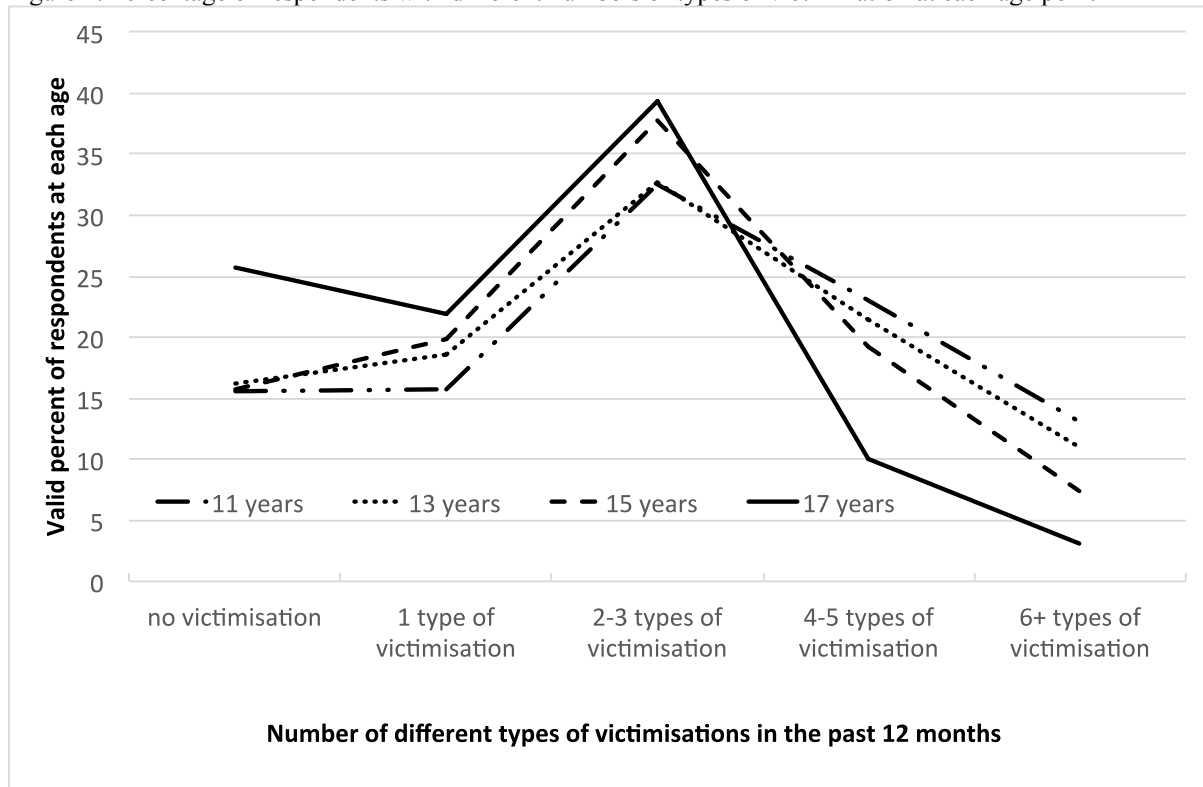
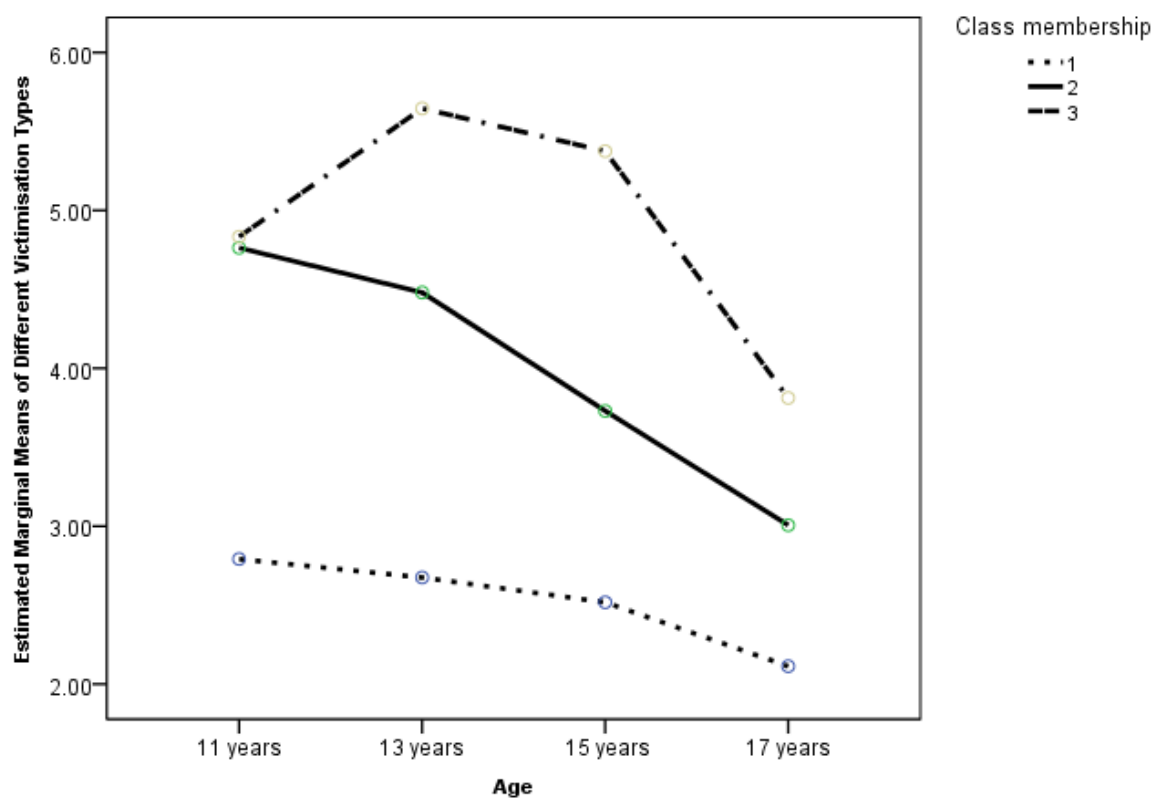


Figure 2. Mean number of different victimization types experienced in the past 12 months for those who had experienced at least one victimization by class membership.



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